Control of Solid Waste Using Low Temperature Oxidation, Phase II

Completed Technology Project (2005 - 2007)

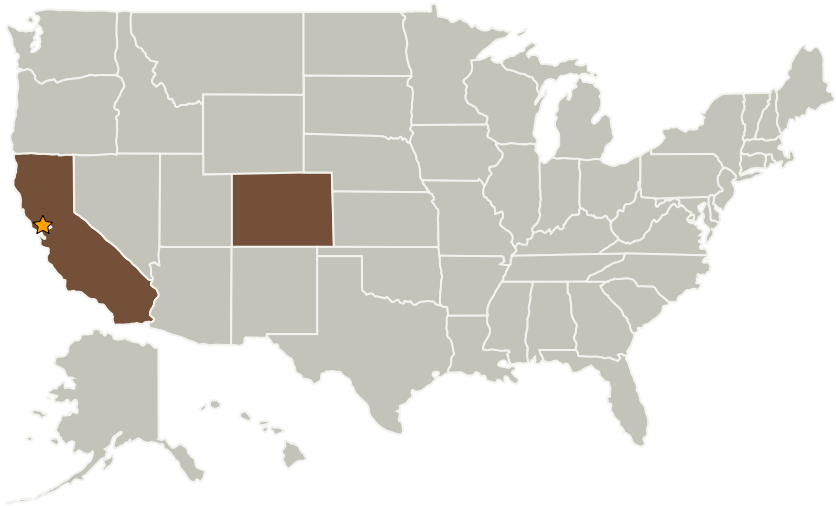
Project Introduction

In February 2004 NASA released "The Vision for Space Exploration". The important goals include extending human presence in the solar system culminating in the exploration of Mars and other remote destinations. One of the most critical problems facing such space missions is identification of effective methods to control solid waste. With current waste models, 1300 kg of waste occupying a volume 20 m3 will be generated in a 180-day mission to Mars. Unprocessed waste poses a biological hazard to the crew and exposure to odors from untreated waste is a threat to crew health and morale. In Phase I TDA identified a low temperature process that effectively oxidized five model waste compounds to carbon dioxide and water at temperatures up to 220

o

C. In addition the reaction rates we measured are much greater than biological oxidation process currently under development. In addition, we found that the quantity of NOX formed was very low. In the Phase II portion of the project, TDA will optimize the reactor configuration, identify the most effective oxidation conditions, and finally design and construct a fully automated pilot scale system for waste treatment that will be delivered to NASA Ames Research Center at the conclusion of the project.

Primary U.S. Work Locations and Key Partners



Control of Solid Waste Using Low Temperature Oxidation, Phase II

Table of Contents

Project Introduction 1
Primary U.S. Work Locations and Key Partners 1
Organizational Responsibility 1
Project Management 2
Technology Areas 2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

Control of Solid Waste Using Low Temperature Oxidation, Phase II

Completed Technology Project (2005 - 2007)

Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
TDA Research, Inc.	Supporting Organization	Industry	Wheat Ridge, Colorado

Primary U.S. Work Locations	
California	Colorado

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.2 Mission Infrastructure, Sustainability, and Supportability
    - TX07.2.1 Logistics Management